

CS477 - Verification of Sequential Programs

- extra credit -

March 14, 2007

Consider the following Java program:

```
while (y > 0) {  
    while (y % 2 == 0) {  
        x = x * x ;  
        y = y / 2 ;  
    }  
    z = z * x ;  
    y = y - 1 ;  
}
```

The problem requests you to solve the following:

1. Determine what the above algorithm attempts to compute;
2. Give preconditions (as general as possible) for which the algorithm soundly computes the function determined at point 1;
3. Prove that given the precondition, the algorithm is sound.